



TECHNICAL BULLETIN
No 149 March 2009

ZINC IN ENGINE OIL UPDATED

There is a growing trend to use heavy duty diesel engine oils in older, "classic" engines due to apparently higher zinc levels.

However, changes to heavy duty engine oil specifications have meant a decrease in zinc levels and in some cases, these are less than what some engine builders desire – but more than what others require. This is apparent with ACEA E6 type oils (for example Diesel SP) and to a lesser extent, API CJ-4 oils (for example Diesel LA).

Also in the background is the fact that for many years, some owners of classic cars, club experts and mechanics have always been against diesel engine oils because they have too much detergent which will clean out and maybe damage engines. This is not unique to any one country. So there is some contradiction here as detergent is suddenly not a factor. In reality, it has not been a factor, especially in a reconditioned engine once run in. (Note: high detergency may cause bore glazing if the engine is not loaded enough during the run in phase as the oil is "too good".)

At Penrite we build our products as being fit for purpose. This means we will vary our levels of zinc (and other components) according to the end use of the product. As can be seen from the latest chart on our zinc levels, some of the Enviro Plus range are very low in zinc as they are low SAPs oils. The HPR petrol oil range though is higher and has been recently modified to further enhance the already high levels of wear protection it provided. It can also be seen that the quoted engine performance (API/ACEA) gives you no real guide as to the actual level of zinc in the oil.

Aftermarket additives designed to boost the anti-wear properties (by adding zinc or other compounds) are not recommended for use in Penrite products. The same can be said for oil "conditioners" or stop smoke additives. Aftermarket additives may upset the balance of the chemistry used in our products and as such we do not warrant our products when such additives are used.

Remember the zinc maximum (actually phosphorus) for API SM (ILSAC GF-4) products only applies to SAE 0W-20, 0W-30, 5W-20, 5W-30 and 10W-30 viscosity grades. Other SAE grades do not need to comply. Incidentally, ILSAC GF-5, due in a couple of years will drop phosphorus maximums to 700ppm (or about 770ppm of zinc from ZDDP).

PRODUCT	SAE GRADE	API RATING	ACEA RATING	ZINC LEVEL PPM
HPR 5	5W-40	SM/CF	A3/B4	1240
HPR 10	10W-50	SM/CF	A3/B4	1090
HPR 15	15W-60	SM/CF	A3/B4	1200
HPR 30	20W-60	SM/CF	A3/B3	1580
HPR 40	25W-70	SL/CF	-	1760
HPR 50	40-70	SL	-	1760
HPR GAS 10	10W-50	CG-4/SL	A3/B4	1320
HPR GAS	20W-60	CG-4/SL	A3/B4	1080
HPR DIESEL 5	5W-40	CI-4/SL	A3/B4	1110
HPR DIESEL 15	15W-50	CH-4/SL	A3/B4	1220
HPR DIESEL	20W-60	CH-4/SJ	A3/B3	1220
SIN 0	0W-50	SM/CF	A3/B3	1230
SIN 5	5W-60	SM/CF	A3/B3	1200
SIN 10	10W-70	SM/CF	A3/B3	1200
SIN 15	15W-40	SL/CF	A3/B4	1320
SIN 25	25W-60	SL/CF	A3/B4	1320
EVERYDAY SYNTHETIC	10W-40	SM/CF	A3/B4	1040
EVERYDAY SYNTHETIC	5W-50	SM/CF	A3/B4	1040
ENVIRO+	0W-40	SM/CF	C3	890
ENVIRO+	5W-30	-	C3	670
ENVIRO+	5W-40	-	C1/C4	670
ENVIRO+	10W-50	SM/CF	C3	890
EVERYDAY DRIVING	15W-40	SL/CF-4	-	900
EVERYDAY DRIVING	20W-50	SL/CF-4	-	910
STOPS OIL BURNING	30-70	SJ	-	740
MARINE 4 STROKE	10W-50	SG	-	1320
SMALL ENGINE MONO	30	SG/CC	-	1170
SMALL ENGINE MULTI	10W-30	SL/CF	A3/B3	1320
SMALL ENGINE MULTI	20W-50	SG/CF	-	1170
RUNNING IN OIL	15W-40	SF/CC	-	1580
<i>(below are for heavy duty trucks and some light duty diesels)</i>				
DIESEL LA	15W-40	CJ-4/SM	E7/E9	1120
DIESEL SP	10W-40	CI-4	E4/E6	880
DIESEL GS	15W-40	CI-4 PLUS/SL	E7	1450
EURO 25	25W-60	CH-4	E5	1320
SIN DIESEL	5W-40	CI-4	E4/B4	1480
USA 25	25W-60	CH-4		1320
<i>(below are for classic motorcycles)</i>				
HD OIL	50-70	SF	-	1760
ENDURO	25W-70	SG	-	1760

This table is correct at February 2009 and applies for products sold in 10L packs or smaller. Minor variations in production batches can occur that do not impact product performance.